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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,720	03/10/2005	Takeo Yamaguchi	NAII123496	5176

26389 7590 09/20/2007

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EXAMINER	
RHEE, JANE J	

ART UNIT	PAPER NUMBER
1745	

MAIL DATE	DELIVERY MODE
09/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,720	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Jane Rhee	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/27/2007 has been entered.

Rejection Withdrawn

2. The 35 U.S.C. 103(a) rejection of claims 1-10 unpatentable over Yamaguchi et al. in view of Asakawa et al. has been withdrawn due to applicant's amendment field on 8/27/2007.

New Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (EP 1202365) in view of Hachisuka et al. (5910357)

As to claim 1, Yamaguchi et al. discloses an electrolyte membrane comprising a porous substrate (abstract), wherein the pores of the porous substrate are filled with a first polymer having proton conductivity thereby to impart proton conductivity to the electrolyte membrane (page 3 paragraph 0019) and the porous substrate is comprised of a I) a second polymer which is at least one selected from the group of polyolefins (teflon col. 3 line 27) a third polymer having a double bond in the molecule of the third polymer (polyimide col. 3 line 27).

Yamaguchi et al. fail to disclose that the porous substrate comprises a crosslinked second polymer wherein the second polymers are crosslinked with one another and a third polymer having a carbon-carbon double bond in the molecule of the third polymer.

Hachisuka et al. teaches that the porous substrate comprises a crosslinked second polymer wherein the second polymers are crosslinked with one another and a third polymer having a carbon-carbon double bond in the molecule of the third polymer for the purpose of controlling their permselectivity by using the reversible shape change of the shape memory polymer (col. 2 lines 40-44).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide that the porous substrate comprises a crosslinked second polymer wherein the second polymers are crosslinked with one another and a third polymer having a carbon-carbon double bond in the molecule of the third polymer in order to control their permselectivity by using the reversible shape change of the shape memory polymer (col. 2 lines 40-44).

As to claim 2, Yamaguchi et al. fail to disclose wherein the third polymer is of the polymers having an alicyclic skeleton structure.As to claim 3, Yamaguchi et al. fail to disclose wherein the third polymer is polynorbornene. As to claim 4, Yamaguchi et al. fail to disclose the second polymer comprises polyethylene. As to claim 5, Yamaguchi et al. discloses that the second polymer is polyethylene and the third polymer is polynorbornene.

Hachisuka et al. teaches wherein the third polymer is of the polymers having an alicyclic skeleton structure (col. 10 line 24 discloses polynorbornene which has an alicyclic skeleton structure), wherein the third polymer is polynorbornene (col. 10 line 24) and wherein the second polymer comprises polyethylene (col. 10 line 27) for the purpose of controlling their permselectivity by using the reversible shape change of the shape memory polymer (col. 2 lines 40-44).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide Yamaguchi et al. with the third polymer that is of the polymers having an alicyclic skeleton structure, wherein the third polymer is polynorbornene and wherein the second polymer comprises polyethylene in order to control their permselectivity by using the reversible shape change of the shape memory polymer (col. 2 lines 40-44).

As to claim 6, Yamaguchi et al. teaches a porous electrolytic membrane for fuel cell wherein one end of the first polymer is bound to surface of pores of the porous substrate for purpose of the structure of the membrane to be supported by the substrate thus the polymer may not be easily released from the pores and the structure of the

membrane is stable even at elevated temperatures unless the polymer is thermally decomposed (col. 5-6 paragraph 0035).

As to claim 7, Yamaguchi et al. teaches a porous electrolytic membrane for fuel cell wherein the pores of the porous substrate are filled with a two polymers (Yamaguchi et al. discloses a homopolymer and a graft polymerized polymer during the polymerization process paragraph 0033) having proton conductivity (col. 5 paragraph 0034, col. 4, paragraph 0023) for the purpose of providing desired proton conductivity to integrate the cathode and electrolyte so that the integrated product may facilitate the handling of the thin electrolyte membrane (col. 7 paragraph 0049 and 0050).

As to claims 8-10, Yamaguchi et al. discloses a direct methanol solid polymer fuel cell comprising the membrane disclosed above (abstract).

Response to Arguments

4. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane Rhee whose telephone number is 571-272-1499. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jane Rhee
September 15,2007